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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 10/560,804 | 12/15/2005 | Jawad Haidar | CU-4560 BWH | 7414 |

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| EXAMINER | |
|---|---|
| ZHU, WEIPING | |

| ART UNIT | PAPER NUMBER |
|---|---|
| 1793 | |

| MAIL DATE | DELIVERY MODE |
|---|---|
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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

| Office Action Summary | Application No. | Applicant(s) | |
|---|---|---|---|
| | 10/560,804 | HAIDAR, JAWAD | |
| | Examiner | Art Unit | |
| | WEIPING ZHU | 1793 | |

*-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --*

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

1)☒ Responsive to communication(s) filed on *24 December 2008*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

4)☒ Claim(s) *1-40 and 45-63* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-40 and 45-63* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

**Application Papers**

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

## DETAILED ACTION

### *Status of Claims*

1. Claims 1-40 and 45-63 are currently under examination, wherein claims 1, 14, 27, 29, 31, 40, 47, 54 and 55 have been amended in applicant's amendment filed on November 7, 2008.

### *Status of Previous Rejections*

2. The previous rejections of claims 1-40 and 45-63 under 35 U.S.C. 103(a) as stated in the Office action dated August 9, 2008 are maintained.

### *Claim Rejections - 35 USC § 103*

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. Claims 1-7, 11-40 and 45-63 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kametani et al. (US 5,032,176) in view of Murphy et al. ("Equilibrium Calculation of the Reduction of Titanium Tetrachloride by Aluminum and Hydrogen" High Temp. Chem. Processes 3, August 1994, pp. 365-374) as stated in the Office action dated August 28, 2008.

With respect to the amended features in claims 1, 14, 27, 29, 31, 40, 47, 54 and 55, they do not change the scopes of the claims, therefore, the reasons of the rejections of these claims as stated in the Office action dated August 28, 2008 are further properly applied herein.

4. Claims 8-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kametani et al. ('176) in view of Murphy et al. as applied to claim 1 above and further in view of O'Donnell et al. (US 5,397,375) as stated in the Office action dated August 28, 2008.

***Response to Arguments***

5. The applicant's arguments filed on November 7, 2008 have been fully considered but they are not persuasive.

First, the applicant argues that aluminum is not used as a reducing agent in Kametani et al. ('176). In response, the examiner notes that Kametani et al. ('176) discloses that the reducing agent comprises aluminum without limiting the content of aluminum (col. 12, lines 10-19), suggesting that aluminum can be used as a reducing agent.

Second, the applicant argues that Kametani et al. ('176) does not teach the claimed two step method. In response, the examiner notes that the rejection was based on the prior art's broad disclosure rather than preferred embodiments. See MPEP 2123. It would have been obvious to one of ordinary skill in the art that the second step as claimed would obviously be performed in the process of Kametani et al. ('176) in view of Murphy et al. to produce titanium-aluminum compounds, because titanium subchloride(s) and $AlCl_3$ would inherently be present as the products of the first step of Kametani et al. ('176) in view of Murphy et al. when aluminum is used as a reducing agent to reduce $TiCl_4$ as disclosed by Murphy et al. (3. Results, pages 366-373).

Third, the applicant argues that the experiment calculations described in Murphy et al. relate to only to gaseous atomic products of Ti, Al. and Cl reacting for indefinite times at temperature in excess of 1500° C and such conditions cannot be applied to the methods described in Kametani et al. ('176). In response, the examiner notes that the arguments of the counsel cannot be relied upon as evidence. See MPEP 21206.02. Murphy et al. does disclose that titanium subchloride(s) and $AlCl_3$ would be formed when aluminum is used as a reducing agent to reduce $TiCl_4$ in certain temperature ranges (3. Results, pages 366-373, especially Fig. 3).

Fourth, the applicant argues that if molten aluminum were used in the process of Kametani et al. ('176), reactions would occur in a one-step process and would result in the formation of uncontrollable products. In response, the examiner notes that Kametani et al. ('176) discloses the first step is conducted in a temperature range of 100° C to 900° C when a reducing agent comprising aluminum is used (col. 3, line 25 to col. 4, line 32), suggesting that aluminum does not have to be in a molten state.

Fifth, the applicant argues that Kametani et al. ('176) does not describe any means for handling gaseous products and means for removing $AlCl_3$ gas when it is produced. In response, the examiner notes that the rejection was based on the prior art's broad disclosure rather than preferred embodiments. See MPEP 2123. It would have been obvious to one of ordinary skill in the art that if aluminum were used in the method of the Kametani et al. ('176) in view of Murphy et al., means for handling gaseous products and means for removing $AlCl_3$ gas would inherently be there in the apparatus of Kametani et al. ('176) in view of Murphy et al..

Sixth, the applicant argues that the rejection of independent claims 27, 29, 31 and 33 are improper because Kametani et al. ('176) in view of Murphy et al does not teach a two-step, controllable reaction process for the production of titanium-aluminum compounds or alloys. In response, see examiner's responses to applicant's arguments above.

Seventh, the applicant argues that Kametani et al. ('176) in view of Murphy et al does not teach mixing aluminum with a precursor material including vanadium subhalide or zirconium subhalide and producing vanadium and/or a vanadium compound or zirconium and /or zirconium compound as claimed in the instant claims 37 and 39 In response, the examiner notes that ejecting a chloride gas of at least one metal selected from aluminum, vanadium, chromium and zirconium into the reaction zone to form intermetallic compounds as desired as disclosed by Kametani et al. ('176) (col. 6, lines 10-21) reads on the claimed features.

***Conclusion***

6. **THIS ACTION IS MADE FINAL**. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Weiping Zhu whose telephone number is 571-272-6725. The examiner can normally be reached on 8:30-16:30 Monday to Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Roy King can be reached on 571-272-1244. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Roy King/
Supervisory Patent Examiner, Art Unit 1793

WZ

12/24/2008